

Production of bio-gasoline from oleic acid by catalytic cracking

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As an alternative to fossil fuels, biofuels such as bio-gasoline and bio-diesel have been studied and developed. Non-food resources including waste vegetable oils are now being considered as feedstock for biofuel production, especially to avoid the conflict between food and energy resource and to reduce feedstock cost.

The catalytic cracking of oleic acid by ZSM-5 was explored under inert atmosphere in a batch reactor. Aromatic hydrocarbons (e.g., branched Benzene) were the major components of obtained liquid products. The content of aromatics increased from 25 to 66% while the content of alkanes (e.g., 2-Methylpentane, Heptane, 2-methyl-) decreased in almost half with increasing temperature 400 to 450° C. The major gaseous products were CO₂ and CO produced through decarboxylation and decarbonylation of oleic acid with 10% zeolite catalyst at 400 and 450° C for 2h. As compared with the gasoline composition the GC-MS area percent of liquid green gasoline was 55% at 400° C and 82% at 450° C.